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ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP  
1725 K STREET, NW  
SUITE 1000  
WASHINGTON, DC 20006

EXAMINER

MARKHAM, WESLEY D

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/960,401

**Applicant(s)**

YONEHARA, HISATOMO

**Examiner**

Wesley D Markham

**Art Unit**

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TH

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/9/2004 (the RCE).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application on 9/9/2004 after final rejection.

Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action (i.e., the final Office action mailed on 5/18/2004) has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/18/2004 has been entered.

### ***Response to Amendment***

2. Acknowledgement is made of the amendment filed by the applicant on 8/18/2004, in which independent Claim 1 was amended, and Claims 9 – 18 were added. **Claims 1 – 18** are currently pending in U.S. Application Serial No. 09/960,401, and an Office Action on the merits follows.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 2, 4 – 6, 13 – 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924).
5. Regarding independent **Claim 1** (from which Claims 2 – 8 depend), Marumoto et al. teaches a method of producing a color filter (Abstract), which comprises forming pixels on a transparent substrate (Col.1, lines 9 – 13 and 20 – 41, and Col.4, lines 16 – 21) using a colored composition containing (a) a resin that can be hardened when an energy such as heat, light, or both, is applied thereto, (b) a coloring material such as a pigment (Col.7, lines 32 – 34), and (c) an organic solvent (Col.7, lines 48 – 51), by an ink-jet printing method, followed by curing the pixels (Figures 5A – 5D, Col.7, lines 3 – 67, and Col.8, lines 1 – 2). Marumoto et al. does not explicitly teach that the resin is an amino resin having a carboxyl group and/or a phenolic hydroxyl group. However, the resin of Marumoto et al. does not appear to be particularly limited, and various examples of resins taught by Marumoto et al. include acrylic resins, melamine resins, a polymer containing hydroxyl groups or carboxyl groups and melamine, etc. (Col.7, lines 36 – 47). The solvent added to the ink (i.e., the mixture of the resin and the coloring material / pigment) is preferably water-based or comprises a water soluble organic solvent in order to obtain a high ink-jetting performance (Col.7, lines 48 – 51). Obayashi et al. teaches an aqueous resin composition that comprises an amino resin having a carboxyl group and/or a phenolic hydroxyl group and a water-borne resin (Abstract, Col.1, lines 6 – 17 and 62 – 67, Col.2, Col.3, lines 14 – 67, and Col.4, lines 1 – 49). The resin also includes

components such as melamine and water-borne acrylic resins (i.e., resins taught by Marumoto et al. to be suitable in an ink-jet process for forming a color filter) (Col.3, lines 38 – 60, and Col.6, lines 37 – 39). The resin of Obayashi et al. can be combined with colorants such as pigments in order to function as an ink (Col.1, line 15, Col.13, lines 49 – 55, and Col.14, lines 3 – 4) and can provide an excellent cured film by baking (Col.14, lines 5 – 7). Additionally, the resin of Obayashi et al. contains various organic solvents, including water-soluble organic solvents (Col.4, lines 60 – 67, Col.5, lines 1 – 56, and Col.6, lines 14 – 17). The resin of Obayashi et al. has the following advantages: (1) since it is water based, the amount of organic solvent utilized and contained in the coating is reduced, (2) it has excellent curability, (3) it has excellent water resistance and heat resistance, and (4) it has a hardness equivalent to the hardness of solvent-borne amino resins (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art to utilize the resin comprising the carboxyl group-containing amino resin of Obayashi et al. as the resin in the ink-jet printing / color filter manufacturing method of Marumoto et al. with the reasonable expectation of (1) success, as Marumoto et al. teaches that water-based resins having components similar to components in the resin of Obayashi et al. can be utilized in the ink-jet printing / color filter manufacturing process, and the resin of Obayashi et al. can be combined with colorants such as pigments in order to function as an ink, and (2) obtaining the benefits of using the resin of Obayashi et al. in the process of Marumoto et al., such as reducing the amount of organic solvent utilized, thereby reducing the manufacturing and waste-disposal costs of the

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process, and forming color filter pixels that have excellent curability, excellent water and heat resistance, and a high hardness due to the properties of the resin of Obayashi et al.

6. The combination of Marumoto et al. and Obayashi et al. also teaches all the limitations of **Claims 2, 4 – 6, 13 – 15, and 18** as set forth above in paragraph 5 and below, including a method wherein / further comprising:

- Claim 5: The colored composition further contains a compound having a photopolymerizable functional group. Specifically, in addition to the carboxyl group-containing amino resin, the water-borne resin composition of Obayashi et al. also contains polymerizable / crosslinkable compounds such as 2-hydroxyethyl (meth)acrylate (2-HEMA) and/or various other acrylate and methacrylate compounds (Col.8, lines 23 – 32, and Col.9, lines 7 – 25). These compounds taught by Obayashi et al. have a photopolymerizable functional group (see, for example, page 15, line 6, of the applicant's specification, Hirayama et al. (USPN 5,821,277) (Col.13, lines 31 – 36 and 61 – 65), and/or Satoh et al. (USPN 5,821,016) (Abstract and Col.6, lines 53 – 65), all of which are cited for the purpose of showing that the various acrylate and methacrylate compounds taught by Obayashi et al. have a "photopolymerizable functional group", as required by Claim 5).
- Claims 2 and 6: The amino resin having a carboxyl group and/or a phenolic hydroxyl group is an amino resin obtained by condensing (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid with at least one aldehyde compound selected from

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the group consisting of formaldehyde, glyoxylic acid, succinsemialdehyde, and hydroxybenzaldehyde (Col.3, lines 16 – 67, and Col.4, lines 1 – 49 of Obayashi et al.).

- Claim 4: The pixels are thermosetted (Col.7, lines 36 – 39 of Marumoto et al., and Col.14, lines 5 – 7 of Obayashi et al.).
  - Claim 13: The solvent has a boiling point of 80 to 200° C. Specifically, a number of the organic solvents taught by Obayashi et al. have such a boiling point (Col.5, lines 1 – 56). For example, ethylene glycol monoethyl ether acetate (BP = 145° C); isopropyl alcohol and t-butanol (BP = 82° C); butyl acetate (BP = 126° C); and propylene glycol monomethyl ether acetate (BP = 146° C).
  - Claims 14 and 15: The organic solvent is at least one selected from the group of solvents listed by the applicant (Col.4, lines 60 – 68, Col.5, lines 1 – 56, of Obayashi et al.).
  - Claim 18: The transparent substrate has an ink-jet receiving layer thereon (Col.5, lines 2 – 10, of Marumoto et al.).
7. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), and in further view of Larson et al. (USPN 5,055,113).
8. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claims 3 and 7** as set forth above in paragraphs 5 and 6, except for a method

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wherein the amino resin having a carboxyl group and/or a phenolic hydroxyl group is an amino resin obtained by condensing at least one triazine compound selected from the group consisting of melamine, benzoguanamine, and (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid, with at least one aldehyde compound selected from the group consisting of glyoxylic acid, succinsemialdehyde, and hydroxybenzaldehyde. Specifically, Obayashi et al. teaches that the amino resin is obtained by condensing at least one triazine compound selected from the group consisting of melamine, benzoguanamine, and (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid, with at least one aldehyde compound in general (Col.3, lines 16 – 67, and Col.4, lines 1 – 49). As taught by Obayashi et al., the aldehyde compound used in producing the amino resin may be a well-known and conventional aldehyde compound used in producing amino resins (Col.3, lines 61 – 64). Specific examples of the aldehyde compound taught by Obayashi et al. include formaldehyde, acetaldehyde, and glyoxal (Col.3, lines 64 – 66). Larson et al. teaches that, in the art of producing a thermosetting amino resin by reacting amino compounds with aldehydes (i.e., a process analogous to those of the applicant and Obayashi et al.), commonly used aldehydes include formaldehyde, acetaldehyde, glyoxal, and glyoxylic acid (Col.4, lines 3 – 12). In other words, Larson et al. teaches the functional equivalence of formaldehyde, acetaldehyde, and glyoxal (as taught by Obayashi et al.) and glyoxylic acid (as claimed by the applicant) as aldehyde compounds used in the formation of an amino resin. Therefore, it would have been obvious to one of ordinary skill in the art to use glyoxylic acid as the aldehyde in the amino resin formation process of Obayashi et



al. instead of formaldehyde, acetaldehyde, or glyoxal, with the reasonable expectation of success and obtaining similar results (i.e., forming the desired amino resin by reacting an amino compound(s) with an aldehyde, regardless of the specific aldehyde compound utilized).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of either Hirayama et al. (USPN 5,821,277) or Satoh et al. (USPN 5,821,016), and in view of Kashiwazaki et al. (USPN 5,552,192).

10. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claim 8** as set forth above in paragraphs 5 and 6, except for a method wherein the pixels are thermosetted after photopolymerization. Specifically, the ink-jet printed pixels of Marumoto et al. can be thermosetted and/or photopolymerized by the application of heat, light, or both (Col.7, lines 26 – 67), but there is no explicit teaching in Obayashi et al. that the resin comprising the amino resin is photopolymerized, only that it is thermally cured (Col.14, lines 5 – 7). However, Obayashi et al. does teach that, in addition to the carboxyl group-containing amino resin, the water-borne resin composition contains polymerizable / crosslinkable compounds such as 2-hydroxyethyl (meth)acrylate (2-HEMA) and/or various other acrylate and methacrylate compounds (Col.8, lines 23 – 32, and Col.9, lines 7 – 25). Both Hirayama et al. and Satoh et al. teach that the various acrylate and methacrylate compounds taught by Obayashi et al. have a photopolymerizable

functional group (Hirayama et al. (Col.13, lines 31 – 36 and 61 – 65), and Satoh et al. (Abstract and Col.6, lines 53 – 65)), and that a resin containing such photopolymerizable functional groups can be photopolymerized after the addition of a photoinitiator to the resin (Col.14, lines 41 – 63 of Hirayama et al., and Col.7, lines 29 – 51 of Satoh et al.). Kashiwazaki et al. teaches that, in the art of manufacturing a color filter by ink-jet printing (i.e., a process analogous to that of Marumoto et al.), it is desirable to first partially cure the colored pixels by light/UV irradiation (i.e., to photopolymerize the pixels) and then to finish curing the colored pixels by a heat treatment (i.e., to thermoset the pixels) after the deposition of a protective layer on the pixels so that the protective layer does not peel away from the colored pixels or crack (Abstract, Col.2, lines 10 – 40, Col.3, lines 7 – 64, and Example 1). Therefore, it would have been obvious to one of ordinary skill in the art to include a photoinitiator in the resin of Obayashi et al., as taught by either Hirayama et al. or Satoh et al., so that the resin could be cured by the application of heat, light, or both, as desired by Marumoto et al., and to first photopolymerize (i.e., to partially cure) and then thermoset (i.e., to fully cure) the ink-jet printed pixels of the combination of Marumoto et al. and Obayashi et al. after the application of the protective layer “20” of Marumoto et al. (Col.6, lines 32 – 35, and Col.8, lines 1 – 2) with the reasonable expectation of successfully and advantageously improving the quality of the color filter produced by the process due to the benefits provided by the two-step pixel curing process (i.e., providing a protective layer that does not peel away from the

pixels or crack, a problem that can occur in a single-step pixel curing process – see Col.3, lines 7 – 14 of Kashiwazaki et al.).

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of either Kashiwazaki et al.(2) (USPN 6,084,006) or Matijevic et al. (USPN 5,871,872).
12. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claim 9** as set forth above in paragraphs 5 and 6, except for a method wherein the amount of pigment in the colored composition is within a range of 10 – 70% by weight based on the non-volatile content in the colored composition. Specifically, the aforementioned combination of references is silent regarding the amount of pigment present in the ink used to ink-jet print the color filter pixels. However, Kashiwazaki et al.(2) teaches that, in the art of ink-jet printing color filter pixels, a preferable amount of pigment to use in the ink is approximately 0.1 to 20 percent by weight (i.e., a range that overlaps the applicant's claimed range) (Abstract, Figures 1 and 2, Col.1, lines 9 – 17, Col.4, lines 1 – 10). As such, it would have been obvious to one of ordinary skill in the art to utilize the amount of pigment claimed by the applicant in the ink-jet ink of the combination of Marumoto et al. and Obayashi et al. because Kashiwazaki et al.(2) teaches that pigment weight percentages within the applicant's claimed range are preferable when formulating ink-jet inks for color filters (i.e., the application of Marumoto et al.). Also, Matijevic et al. teaches that, in the art of ink-jet

printing color filter pixels, the mechanical properties of the pigment-containing coating deteriorate when the solid loading exceeds an upper limit of 70%, and as such, 60% by weight of pigment represents the practical upper limit (Abstract, Col.1, lines 5 – 11, and Col.9, lines 2 – 6). Therefore, it would have been obvious to one of ordinary skill in the art to utilize the amount of pigment claimed by the applicant (e.g., less than 60%, as taught by Matijevic et al.) in the ink-jet ink of the combination of Marumoto et al. and Obayashi et al. with the reasonable expectation of successfully and advantageously using an ink that has an amount of pigment necessary to produce a color filter, but not so much as to cause the mechanical properties of the color filter to deteriorate (i.e., due to excessive solids loading).

13. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of either Akahira et al. (USPN 6,224,205 B1) or Matijevic et al. (USPN 5,871,872).

14. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claims 10 and 11** as set forth above in paragraphs 5 and 6, except for a method wherein the average particle diameter of the pigment is within a range of 0.005 to 3 microns, particularly 0.01 to 1 micron. Specifically, the aforementioned combination of references is silent regarding the pigment particle diameter. However, both Akahira et al. (Abstract, Col.1, lines 8 – 14, and Col.14, lines 10 – 19) and Matijevic et al. (Abstract, Col.1, lines 5 – 11, Col.2, lines 5 – 18) teach that pigments having

particle diameters within the range claimed by the applicant are preferable in the production of an ink for ink-jet printing color filter pixels. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a pigment having an average particle diameter within the range claimed by the applicant (and taught by either Akahira et al. and Matijevic et al.) because both Akahira et al. and Matijevic et al. teach that pigments having the claimed diameter are preferably used in inks for producing color filters (i.e., the application of Marumoto et al.).

15. Claims 12, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of Kashiwazaki et al.(3) (USPN 6,203,604 B1).

16. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claims 12, 16, and 17** as set forth above in paragraphs 5 and 6, except for a method wherein the amount of solvent used in the colored composition (i.e., ink-jet ink) is within the range claimed by the applicant (1 to 19 ppw based on the non-volatile content in the colored composition), and the viscosity of the colored composition is not more than 50 cP, particularly not more than 10 cP. Specifically, the combination of Marumoto et al. and Obayashi et al. is silent regarding the exact amount of organic solvent utilized, as well as the exact viscosity of the ink-jet ink. However, it is clear that the amount of solvent added to the ink should be sufficient to provide a desirable ink jetting performance (Col.7, lines 48 – 51 of Marumoto et al.), and the prior art is generally concerned with obtaining a desirable viscosity for

the composition (Col.4, lines 50 – 54 of Obayashi et al.). Kashiwazaki et al.(3) teaches that, in the art of ink-jet printing a color filter, the viscosity of the ink can be adjusted by the use of an organic solvent in order to obtain desirable ink ejection properties, and the ink ejection property is particularly excellent when the ink viscosity is not higher than 10 cP (which is the range of viscosity values claimed by the applicant) (Abstract, Col.10, lines 22 – 32, Col.11, lines 34 – 50). In other words, Kashiwazaki et al.(3) teaches that the amount of solvent in the ink-jet ink is a result / effective variable that can be adjusted in order to obtain an ink having a viscosity that is suitable and desirable from the perspective of ink-jetting performance. Therefore, it would have been obvious to one of ordinary skill in the art to optimize the amount of solvent in the composition of the combination of Marumoto et al. and Obayashi et al. as a result / effective variable through routine experimentation in order to manipulate the viscosity in the manner desired by the purveyor in the art. In doing so, one of ordinary skill in the art would have added enough solvent to make the viscosity of the composition not higher than 10 cP (as claimed by the applicant) because Kashiwazaki et al.(3) teaches that an ink having such a viscosity has a desirable ink ejection property.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of Kashiwazaki et al.(2) (USPN 6,084,006).

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18. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of **Claim 18** as set forth above in paragraph 5, except for a method wherein the transparent substrate has an ink-jet receiving layer thereon. However, Kashiwazaki et al.(2) teaches that, in the art of ink-jet printing a color filter (i.e., a process analogous to that of Marumoto et al.), it is desirable to provide an ink-jet receiving layer on the substrate in order to adjust the spread of the ink to a desirable size (Col.6, lines 33 – 42). Therefore, it would have been obvious to one of ordinary skill in the art to provide an ink-jet receiving layer on the transparent substrate of the combination of Marumoto et al. and Obayashi et al. in order to insure that the subsequently ink-jet printed color filter pixels only spread to the desirable size.

### ***Response to Arguments***

19. Applicant's arguments filed on 8/18/2004 have been fully considered but they are not persuasive.
20. First, the applicant states that, when a pigment (as opposed to a dye) is used as a coloring material, a color filter comprising the pigment is superior in heat-, light-, and solvent-resistance. However, a pigment disperses (i.e., does not dissolve) in the resin and the solvent. The applicant states that the inventor found that, when an amino resin having a carboxyl group and/or a phenolic hydroxyl group is used in combination with the pigment, excellent colored compositions can be obtained since the dispersibility of the pigment is good. The applicant then argues that the excellent effects of the amino resin (e.g., good dispersibility and good ejecting property) are

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not described at all in Obayashi or Marumoto, alone or in combination, and as such, one of ordinary skill in the art would not have conceived of the present invention. In response, this argument is not convincing. First, the examiner notes that the benefits of using a pigment (as opposed to a dye) in an ink for ink-jet printing a color filter, such as superior thermal resistance and optical resistance, were well-known in the art at the time of the applicant's invention (see, for example, Col.14, lines 10 – 15 of Akahira et al.). Additionally, both Obayashi and Marumoto explicitly teach using a pigment in the composition (see the discussion of Claim 1 in paragraph 5 above), as claimed by the applicant. Also, in response to applicant's argument that the prior art does not suggest that the specific amino resin claimed by the applicant has good pigment dispersibility, the fact that applicant has recognized another advantage (e.g., the good pigment dispersibility of an amino resin having a carboxyl group and/or a phenolic hydroxyl group) which would flow naturally from following the suggestion of the prior art (i.e., using an amino resin having a carboxyl group and/or a phenolic hydroxyl group because of the advantages taught by Obayashi et al. - (1) since it is water based, the amount of organic solvent utilized and contained in the coating is reduced, (2) it has excellent curability, (3) it has excellent water resistance and heat resistance, and (4) it has a high hardness) cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Further, since Obayashi et al. explicitly teaches that a pigment can be included in the amino resin composition



(Col.13, lines 49 – 55), one of ordinary skill in the art would have, at the very least, reasonably expected that the resin is suitable for pigment dispersion.

21. Second, the applicant argues that water is used as a solvent in the composition of Obayashi, while water is not used in the colored composition of the present invention. In response, this argument is not convincing. First, the applicant's claims only require that the colored composition contain an organic solvent, not that the composition excludes water. In this case, the ink-jet ink composition taught by the combination of Obayashi and Marumoto contains any number of organic solvents (see the discussion in paragraphs 5 and 6 above), as required by the claims. The applicant also argues that using an organic solvent as opposed to water in the composition leads to a higher quality color filter. In response, this argument appears to be speculation on the part of the applicant and is not supported by any art or evidence of record. Additionally and importantly, the examiner notes that the aforementioned argument appears to be contradictory to the applicant's own disclosure that the solvent used in the composition of the present invention may be water or consist essentially of water (see page 12, lines 13 – 15, of the applicant's specification).

22. Third, in response to applicant's arguments against the Obayashi and Marumoto references individually (e.g., that Obayashi does not use the amino resin for ink jet printing a color filter, and Marumoto does not teach the specifically claimed amino resin), one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642

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F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the examiner has clearly set forth the motivation for using the resin of Obayashi in the color filter ink-jet printing method of Marumoto, and the combination of references renders the applicant's claims obvious under 35 U.S.C. 103(a).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kashiwazaki(4) (USPN 6,475,683 B1) teaches a method comprising ink-jet printing a composition comprising a pigment, an organic solvent, and a binder resin such as an amino resin to form color filter pixels on a substrate, and then curing the pixels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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WDM

WDM

Wesley D Markham  
Examiner  
Art Unit 1762

  
SHYNE P. BECK  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1760